

-44-

## CLAIMES

1. An image reproducing and forming apparatus comprising:

5        an ejection head configured to eject a liquid droplet from a nozzle to form an image on a medium;

         a driving signal generating unit configured to generate a driving signal having a waveform that causes the ejection head to operate at a driving  
10 frequency other than the natural frequency of the ejection head; and

         a driving unit configured to drive the ejection head based on the driving signal supplied from the driving signal generating unit.

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2. The image reproducing and forming apparatus of claim 1, wherein the driving signal generating unit produces the driving signal including a non-ejecting  
20 pulse that produces energy for not ejecting the droplet, and the driving unit applies the non-ejecting pulse to the ejection head in a non-printing range in order to drive the ejection head at the driving frequency other than the natural frequency of  
25 the ejection head.

3. The image reproducing and forming apparatus of  
claim 2, wherein the driving signal generating unit  
5 produces the non-ejecting pulse, making use of a  
portion of an ejecting pulse of the driving signal.

4. The image reproducing and forming apparatus of  
10 claim 2, wherein the driving signal generating unit  
produces the non-ejecting pulse that draws in a  
meniscus of the nozzle.

15 5. The image reproducing and forming apparatus of  
claim 2, wherein the driving signal generating unit  
produces the non-ejecting pulse that pushes out a  
meniscus of the nozzle and has a pulse width smaller  
than a period of pressure-induced resonance in a  
20 liquid chamber of the ejection head.

6. The image reproducing and forming apparatus of  
claim 2, wherein the non-ejecting pulse has a falling  
25 edge with a first rate of voltage change and a rising

-46-

edge with a second rate of voltage change that is smaller than the first rate of voltage change.

5 7. The image reproducing and forming apparatus of claim 2, wherein the non-ejecting pulse includes a first portion that draws in a meniscus of the nozzle with a first rate of voltage change and a second portion that restores the meniscus of the nozzle with  
10 a second rate of voltage change smaller than the first rate of voltage change.

8. The image reproducing and forming apparatus of  
15 claim 2, wherein the non-ejecting pulse includes a first waveform that pushes out a meniscus of the nozzle and a second waveform that follows the first waveform to draw in the meniscus of the nozzle, the first waveform having a pulse width smaller than a  
20 resonant frequency of a liquid chamber of the ejection head.

9. The image reproducing and forming apparatus of  
25 claim 2, wherein the driving signal includes a first

-47-

non-ejecting signal inserted at a beginning of the driving signal and a second non-ejecting signal inserted at an end of the driving signal.

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10. The image reproducing and forming apparatus of claim 2, wherein the ejection head includes an actuator for producing a pressure to eject the droplet, and the driving signal including the non-ejecting pulse is applied to the actuator.

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